VACCINE COMPOSITION, HIV-INFECTION SUPPRESSION FACTOR AND METHOD FOR THE VACCINATION AGAINST HIV

ABSTRACT

A possibility of a dendritic cell (DC)-based vaccination against HIV-1 infection in humans was explored in SCID mice reconstituted with human peripheral blood mononuclear cells (PBMC). HIV-1-negative normal human PBMC were transplanted into the spleens of SCID mice (hu-PBL-SCID-spl) together with autologous mature DC pulsed with either inactivated HIV-1 (R5 or X4 strain) or ovalbumin (OVA), followed by a booster injection with autologous DC pulsed with respective antigens after 5 days. Five days later, these mice were challenged *i.p.* with R5 HIV-$1_{JR\text{-}CSF}$. Analysis of infection on seven days post infection showed that the DC-HIV-1-immunized hu-PBL-SCID-spl mice, irrespective of immunized HIV-1 strains, were protected against the HIV-1 infection. In contrast, none of the DC-OVA-immunized mice were protected. Sera from the DC-HIV-1-, but not DC-OVA-, immunized mice interfered with *in vitro* infection of activated PBMC and macrophages with R5, but not X4, HIV-1. Upon restimulation with HIV-1 *in vitro*, the human $CD4^+$ T cells derived from the DC-HIV-1-immunized mice produced similar R5 HIV-1 suppression factor. Neutralizing antibodies against human RANTES, MIP-1-alpha, MIP-1-beta, IFN-alpha, IFN-beta, IFN-gamma, IL-4, IL-10, IL-13, IL-16, MCP-1, MCP-3, TNF-alpha or TNF-beta did not reverse the HIV-1 suppressive activity. These results show that inactivated HIV-1-pulsed autologous DC can stimulate human $CD4^+$ T cells living in the hu-PBL-SCID-spl mice to produce unknown soluble factor(s) protective against R5 HIV-1 infection.